CLAIMS

What is claimed is:

1. A method for suppressing pathological calcification of the meniscal and articular cartilage matrix, comprising:

inhibiting activation and/or activity of zymogen factor (FXIIIa) and tissue transglutaminase (tTGase) in chondrocytes.

2. The method according to claim 1, wherein the inhibition of activation is accomplished by blocking production of a member selected from the group consisting essentially of interleukins IL-I, IL-8, nitric oxide donor Noc-12, peroxynitrite generator Sin-1, tumor necrosis factor α (TNFα), and S100 family of proteins.

3. The method according to claim 1, wherein the inhibition of activation is accomplished by blocking TNFα receptor-associated signaling factors (TRAFs), TRAF2 and TRAF6.

4. The method according to claim 3, wherein the inhibition is accomplished by expressing A20 in chondrocytic cells.

5. A method for inhibiting TGase activity of zymogen Factor XIIIa (FXIIIa) and/or tissue transglutaminase (tTGase) in a chondrocyte, comprising contacting the chondrocyte with an effective amount of an inhibitor that inhibits tTGase and/or FXIIIa.

6. The method of claim 5, wherein the inhibitor is an inhibitor of IL-1, Noc-12, Sin-1, tumor necrosis factor a (TNFα), and/or TNFα receptor-associated signaling factor (TRAFs), TRAF2 and TRAF6.

7. The method of claim 5, wherein the inhibitor is a polynucleotide that inhibits tTGase or FXIIIa expression.

8. The method of claim 5, wherein the method is performed *in vitro*.

9. The method of claim 5, wherein the method is performed *in vivo*.

10. The method of claim 9, wherein the chondrocyte is from a chondrocyte-derived cell line.

11. A method for identifying an agent that affects matrix calcification, comprising

contacting a chondrocyte *in vitro* with a test agent under conditions for inducing matrix calcification, wherein the chondrocyte expresses zymogen factor XIIIa (FXIIIa) and/or tissue transglutaminase (tTGase); and

determining the effect of the test agent on matrix calcification, wherein an effect on matrix calcification identifies the test agent as an agent that affects matrix calcification.

12. The method of claim 11, wherein the chondrocyte is transfected with a TGase expression vector for expressing zymogen factor FXIIIa or tTGase.

13. The method of claim 12, wherein the chondrocyte is from a chondrocyte-derived cell line.

14. The method of claim 11, wherein the conditions for inducing matrix calcification include contacting the chondrocyte with an agent that activates and/or increases activity of zymogen factor FXIIIa and/or tissue transglutaminase (tTGase), wherein the agent affects the activity of IL-1, Noc-12, Sin-1, and/or tumor necrosis factor a (TNFα).

15. The method of claim 11, wherein the test agent is a nitric oxide synthase (NOS) inhibitor.